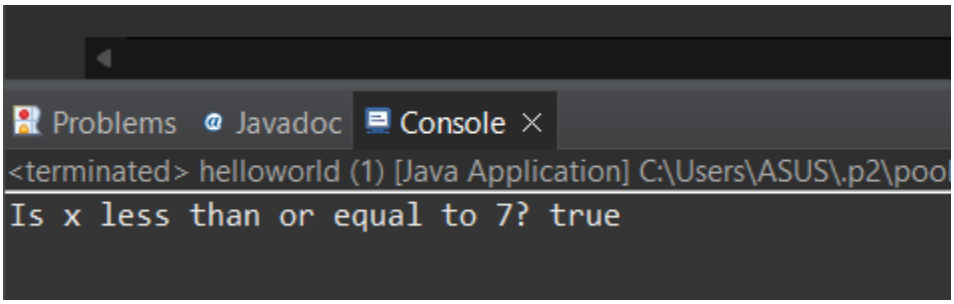
Java 5_1

1. Using a ternary operator, write an if/else statement that will return true or false if the variable x is less than or equal to 7.

```
package helloworld;

public class helloworld {

 public static void main(String[] args) {

        int x = 5; // You can change this value to test different cases

    boolean result = (x <= 7) ? true : false;

    System.out.println("Is x less than or equal to 7? " + result);

 }

}
```

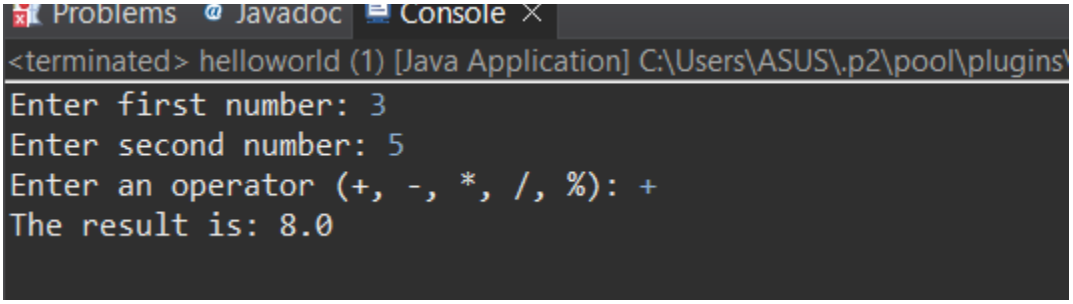


2. Write a program that prompts the user to enter two floating point (double) numbers and an operator (*, +, /, %, -). Print the results of the given operation. For reading the command line, use the Scanner class. Write the program first using switch logic, then re-write the program using if/else logic.

```
package helloworld;

import java.util.Scanner;

public class helloworld {

 public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);


    System.out.print("Enter first number: ");

    double num1 = scanner.nextDouble();


    System.out.print("Enter second number: ");
```

```
double num2 = scanner.nextDouble();

System.out.print("Enter an operator (+, -, *, /, %): ");
char operator = scanner.next().charAt(0);

double result;

switch (operator) {
    case '+':
        result = num1 + num2;
        break;
    case '-':
        result = num1 - num2;
        break;
    case '*':
        result = num1 * num2;
        break;
    case '/':
        result = num1 / num2;
        break;
    case '%':
        result = num1 % num2;
        break;
    default:
        System.out.println("Invalid operator!");
        return;
}

System.out.println("The result is: " + result);
```

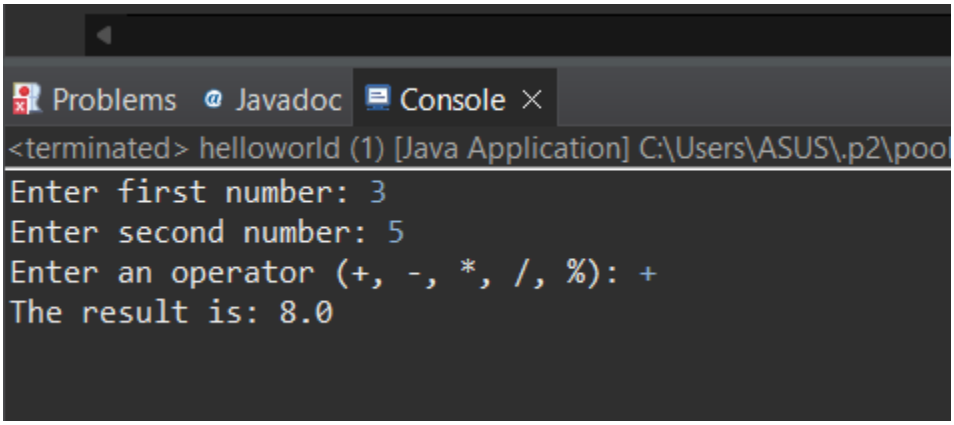
```
 }
}
```



Using If/Else Logic

```
package helloworld;

import java.util.Scanner;

public class helloworld {
 public static void main(String[] args) {
            Scanner scanner = new Scanner(System.in);

    System.out.print("Enter first number: ");
    double num1 = scanner.nextDouble();

    System.out.print("Enter second number: ");
    double num2 = scanner.nextDouble();

    System.out.print("Enter an operator (+, -, *, /, %): ");
    char operator = scanner.next().charAt(0);

    double result;

    if (operator == '+') {
       result = num1 + num2;
    } else if (operator == '-') {
```

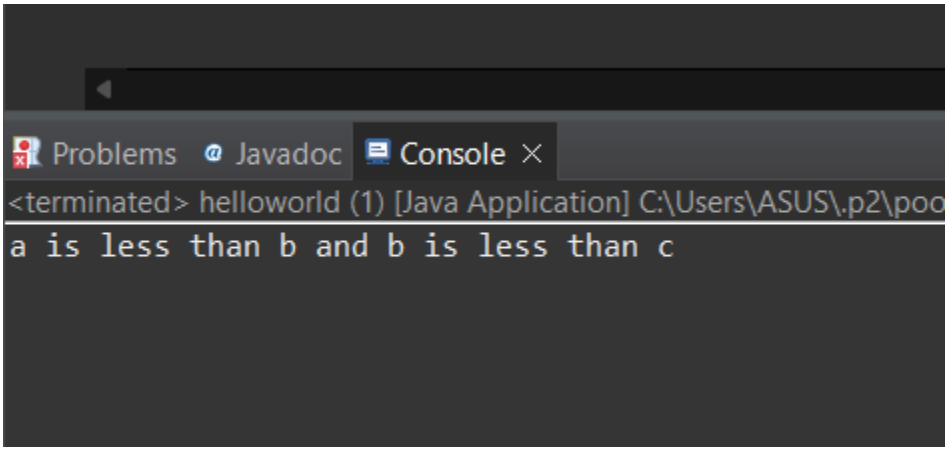
```
        result = num1 - num2;
    } else if (operator == '*') {
        result = num1 * num2;
    } else if (operator == '/') {
        result = num1 / num2;
    } else if (operator == '%') {
        result = num1 % num2;
    } else {
        System.out.println("Invalid operator!");
        return;
    }

    System.out.println("The result is: " + result);
 }
}
```



3. True or False: IF/ELSE statements can always be replaced with SWITCH statements.

```
package helloworld;
import java.util.Scanner;
public class helloworld {
 public static void main(String[] args) {
            int a = 5;
```

```
    int b = 10;
    int c = 15;

    if (a < b && b < c) {
        System.out.println("a is less than b and b is less than c");
    } else {
        System.out.println("Condition not met");
    }
 }
}
```



4. Write a Java program to do the following that determines your weight on another planet. The program should ask for the user's weight on Earth, then present a menu of the other planets in our solar system. The user should choose one of the planets from the menu. The program should display the phrase like the following: “Your weight on Mars is 55 lbs.” Use the following conversion factors

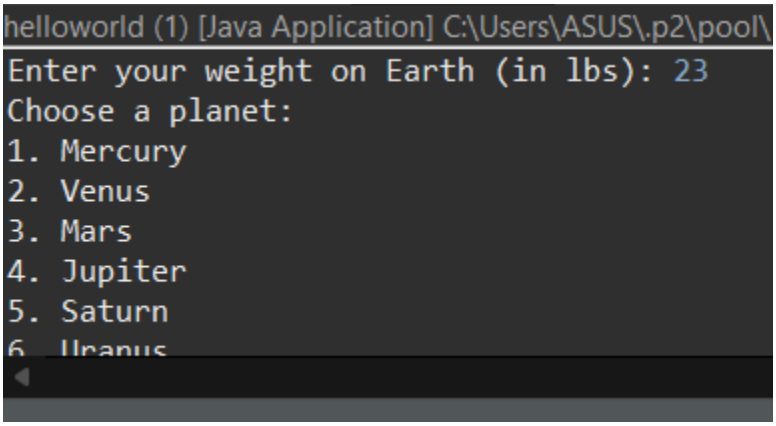
Planet	Conversion factor (multiply your Earth weight by this number to determine your weight on this planet)
Mercury	0.38
Venus	0.91
Mars.	0.38
Jupiter	2.36
Saturn	0.92
Uranus	0.89
Neptune	1.13

```
package helloworld;
import java.util.Scanner;
public class helloworld {
 public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

    System.out.print("Enter your weight on Earth (in lbs): ");
    double earthWeight = scanner.nextDouble();

    System.out.println("Choose a planet:");
    System.out.println("1. Mercury");
    System.out.println("2. Venus");
    System.out.println("3. Mars");
    System.out.println("4. Jupiter");
    System.out.println("5. Saturn");
    System.out.println("6. Uranus");
```

```
System.out.println("7. Neptune");

int choice = scanner.nextInt();
double conversionFactor = 0;

switch (choice) {
    case 1:
        conversionFactor = 0.38;
        break;
    case 2:
        conversionFactor = 0.91;
        break;
    case 3:
        conversionFactor = 0.38;
        break;
    case 4:
        conversionFactor = 2.36;
        break;
    case 5:
        conversionFactor = 0.92;
        break;
    case 6:
        conversionFactor = 0.89;
        break;
    case 7:
        conversionFactor = 1.13;
        break;
    default:
        System.out.println("Invalid choice!");
```

```
        return;
}

double planetWeight = earthWeight * conversionFactor;
String planetName = "";

switch (choice) {
    case 1:
        planetName = "Mercury";
        break;
    case 2:
        planetName = "Venus";
        break;
    case 3:
        planetName = "Mars";
        break;
    case 4:
        planetName = "Jupiter";
        break;
    case 5:
        planetName = "Saturn";
        break;
    case 6:
        planetName = "Uranus";
        break;
    case 7:
        planetName = "Neptune";
        break;
}
```

```
    System.out.println("Your weight on " + planetName + " is " + planetWeight + " lbs.");
 }
}
```



5. Write a Java program that will decide if a student gets into Mountville University. Students must have one of the following criteria: • been a valedictorian or salutatorian of a school of 1400 or more • had a gpa of 4.0 or better and a SAT score of 1100 or more • had a gpa of 3.5 or better and an SAT score of 1300 or more • had a gpa of 3.0 or better and an SAT score of 1500 or more

```
package helloworld;

import java.util.Scanner;

public class helloworld {
 public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);


    System.out.print("Enter your GPA: ");
    double gpa = scanner.nextDouble();


    System.out.print("Enter your SAT score: ");
    int satScore = scanner.nextInt();


    System.out.print("Were you a valedictorian or salutatorian of a school of 1400 or more students? (yes/no): ");
    String valedictorian = scanner.next();
```

```
    boolean admitted = false;

    if (valedictorian.equalsIgnoreCase("yes")) {
        admitted = true;
    } else if (gpa >= 4.0 && satScore >= 1100) {
        admitted = true;
    } else if (gpa >= 3.5 && satScore >= 1300) {
        admitted = true;
    } else if (gpa >= 3.0 && satScore >= 1500) {
        admitted = true;
    }

    if (admitted) {
        System.out.println("Congratulations! You have been admitted to Mountville University.");
    } else {
        System.out.println("Sorry, you do not meet the admission criteria for Mountville University.");
    }
 }
}
```